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Se-substitution effect on Yb_4As_3

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Various physical properties of R_4X_3 (R=rare earth, X=pnictogen) compounds with the anti-Th_3P_4 structure, which are related to the charge ordering particulally, have been intensively investigated. Magnetic properties of typical charge ordering compound Yb_4As_3 have been interpreted theorically and experimentally as it is originated from antiferromagnetic chains. To clarify transport properties of the low carrier concentration system Yb_4As_3 in more detail, we prepared single crystals of $Yb_4(As_{1-X}Se_X)_3$ (x=0.01, 0.02, 0.05). We expected substituting Se for As to dope electrons into the system. The result of X-ray powder diffraction and magnetic susceptibility measurements indicate that substituting Se may cause a valence change from Yb^{3+} into Yb^{2+}.